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A NEW GENUS OF PHILOTARSIDAE (CORRODENTIA) AND NEW SPECIES OF THIS AND RELATED FAMILIES FROM HONG KONG

By Ian W. B. Thornton

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Manuscript received 23rd March, 1959

(Read 6th May, 1959)

With 20 Text-figures

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I. Introduction

The Mesopsocidae, Philotarsidae and Elipsocidae have certain common affinities which make it convenient to group them together in a taxonomic study of the Corrodentia of Hong Kong, of which this paper is the second part (*see* Thornton, 1959). Roesler (1944) treated them as subfamilies of a redefined family Mesopsocidae (End., 1903) Roesl., 1940, but since this does not appear to have found wide acceptance I shall retain the family names in general use (Pearman, 1936; Badonnel, 1943, 1951).

Until now representatives of the Mesopsocidae and Philotarsidae have not been recorded from the Oriental Region, although species of *Mesopsocus* have been reported from Japan and New Zealand, and the Philotarsidae are well represented in Australasia and the Pacific area.

II. Descriptions of and Notes on New Species

Mesopsocidae Enderlein, 1903, *part*

Mesopsocus hongkongensis sp. n.

Female

Coloration (freshly killed, in alcohol).—Head generally chalky white, with light brown, pale grey and dark grey markings. Vertex with usual markings light grey, anterior border edged with dark grey, a large light brown spot on each side midway between eye and the dark brown median epicranial suture; frons white, with a dark grey triangular area extending from its posterior suture with apex of triangle close to anterior suture. Suture between frons and vertex white. Ommatidial protuberance white, ommatidia black. Postclypeus with pale grey markings; anteclypeus white; labrum white with a dark brown inverted U

medially on anterior margin. Genae white, with five bluish grey marks below eye and narrow pale grey border to antennal socket. Scape and pedicel of antenna white, first and second flagellar segments light brown, second segment dark brown apically, rest of flagellum dark brown. Eyes greenish-grey, darkening with storage. Maxillary palpi pale grey, last segment dark brown at apex.

Mesothorax: antedorsum dark brown, median furrow white, posterior apical region white; dorsal lobes grey, edged with white, marked with brown posteriorly on lateral borders; scutellum grey. Metathorax: antedorsum very pale grey, brown markings on dorsal lobes more extensive, otherwise similar to mesothorax. Thoracic pleura: white, sutures edged with dark brown. Legs: coxae very pale cream, edged with dark brown basally; trochanters and femora pale cream, faint brown patch on outer edge of femur distally; tibiae pale brown, darkening distally; tarsi very dark brown. Wings: hyaline, pterostigma and veins (except *an*) of fore wing brown pigmented (fig. 1), stigmasac brown.

Abdomen: ground colour pale grey with typical dark brown markings dorsally (fig. 2); apical structures pale.

Morphology.—Eyes prominent, epicranial sutures fine.

Fore wing (fig. 1). Number of ctenidiobothria on first hind tarsal joint: 3 specimens; 22, 22, 21.

Subgenital plate (fig. 5) with well defined spoon-shaped terminal lobe having small chitinous granulations over distal half and lateral margins; main body of plate evenly setose, two longer setae on the isthmus joining terminal lobe to main plate.

A field of 33–36 trichobothria on each paraproct.

Gonapophyses (fig. 6): ventral valve (first valvula) with prominent ventral dilation distally and terminating in a large curved spine which bears short recurved setae ventrally; dorsal valve (second valvula following Broadhead, 1950; not Badonnel, 1943) sub-rectangular, on posterior margin about one-third width of valve from its dorsal edge a large curved spine beset with short pointed spinelets which also occur on valve just basal to spine and on margin of valve dorsal to it, a definite indentation on posterior margin of valve immediately dorsal to spine; lateral valve (third valvula) long and roughly oval, bearing about a score of long setae distally.

Dimensions.—Body length (in alcohol): 3·7 mm.

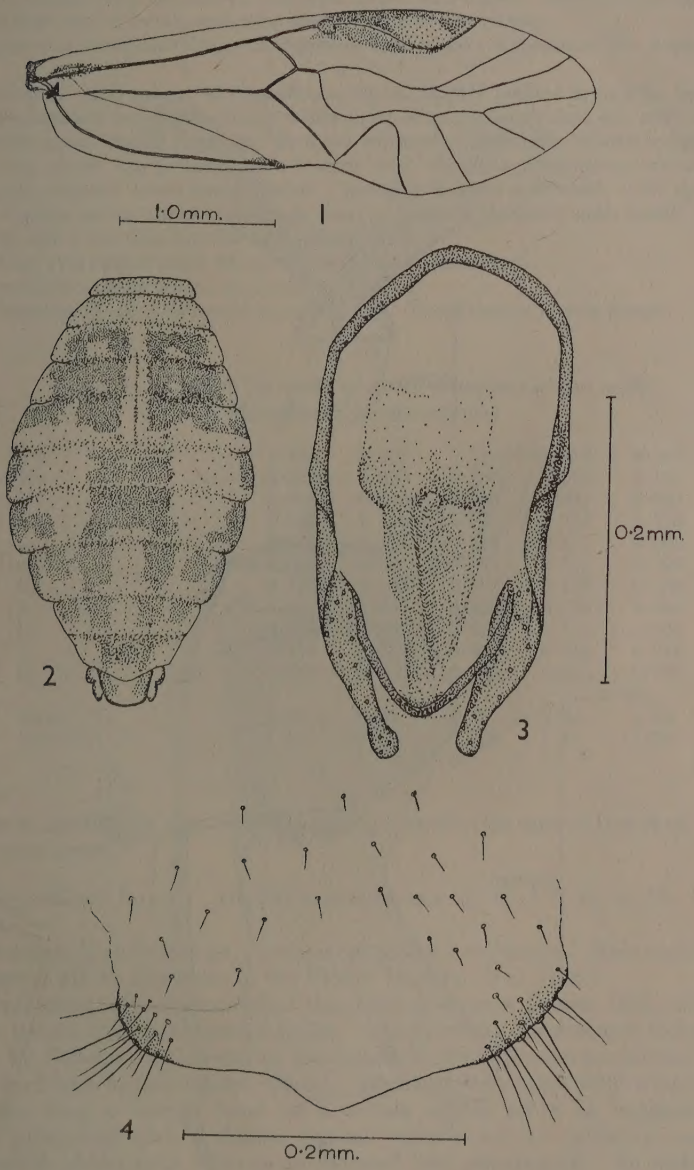
Dimensions of other characters as in Table I.

TABLE I.—*Length (in mm.) of eleven characters of three females of* Mesopsocus hongkongensis

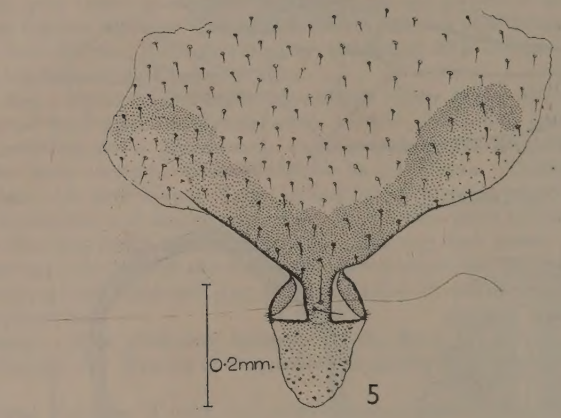
Fore wing (Fw)	4·250	4·575	4·325
Hind wing (Hw)	3·250	3·425	3·175
Hind femur (Hf)	0·825	0·875	0·813
Hind tibia (Ht)	1·863	1·863	1·738
Proximal hind tarsal segment (t_1)	0·481	0·439	0·455
Second hind tarsal segment (t_2)	0·111	0·100	0·103
Distal hind tarsal segment (t_3)	0·167	0·172	0·165
Antenna (A)	5·075	5·175	4·688
First flagellar segment (f_1)	0·813	0·813	0·770
Second flagellar segment (f_2)	0·738	0·733	0·663
Third flagellar segment (f_3)	0·647	0·626	0·561
Ratio t_1/t_2	4·33	4·39	4·42
Ratio f_1/f_2	1·10	1·11	1·16

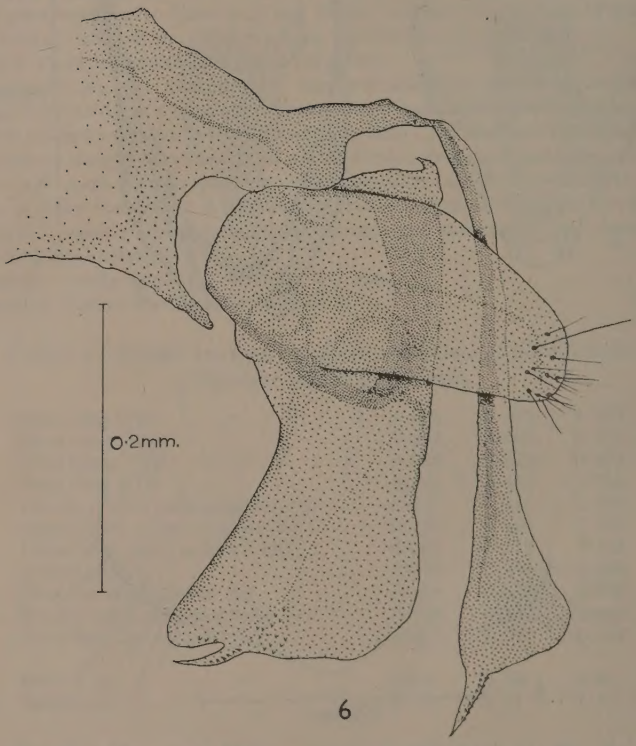
MALE

Coloration (freshly killed, in alcohol).—As the female, with the following exceptions: first two joints of antenna grey, flagellum wholly very dark brown, almost black; last joint of maxillary palp brown.



FIGS. 1–4.—*Mesopsocus hongkongensis* sp. n. (1) Fore wing of female ; (2) dorsal abdominal pattern ; (3) male phallosome ; (4) hypandrium of male.





FIGS. 5–6.—*Mesopsocus hongkongensis* sp. n. female. (5) Subgenital plate; (6) gonapophyses.

Morphology.—Eyes prominent, only little larger than female. First joint of flagellum thicker than that of female, and setae longer, but not twice as long.

Number of ctenidiobothria on first joint of hind tarsus : 3 specimens 23 ; 2 specimens 21.

Genitalia : hind margin of hypandrium (fig. 4) bluntly pointed in middle, bare and weakly sclerotised except at each side, where about 16 long setae are sited on a more heavily sclerotised area. Penial frame (fig. 3) closed anteriorly. Parameres dilated apically but narrowing evenly into terminal lobes bearing small chitinous granulations, without any prominent external lobes being present. Aedeagus heavily sclerotised, with short ill-defined spines on the apex. Paraprocts bear on posterior margin a small double conical tubercle with a fine hair between two macrotrichiae.

A large oval field of about 38 trichobothria on each paraproct.

Dimensions.—Body length (in alcohol) : 3·1 mm.

Dimensions of other characters as in Table II. Wings shorter than in female.

TABLE II.—*Length (in mm.) of eleven characters of five males of* Mesopsocus hongkongensis

Fw	3·788	3·909	3·955	3·985	4·197
Hw	2·879	2·939	2·955	2·985	3·167
Hf	0·788	0·803	0·758	0·811	0·833
Ht	1·652	1·712	1·591	1·712	1·773
t_1	0·464	0·477	0·451	0·477	0·502
t_2	0·098	0·098	0·093	0·105	0·104
t_3	0·123	0·143	0·153	0·159	0·156
A	5·121	4·902	4·833	5·235	4·864
f_1	0·788	0·803	0·758	0·788	0·848
f_2	0·712	0·712	0·697	0·712	0·818
f_3	0·621	0·606	0·606	0·629	0·697
Ratio t_1/t_2 . .	4·73	4·87	4·85	4·54	4·83
Ratio f_1/f_2 . .	1·11	1·13	1·09	1·11	1·04

NYMPH

Can be identified on dorsal abdominal pattern, which is the same as that of the adults in the later instars.

HONG KONG ISLAND : On *Pinus massoniana*, xii.57, i, ii, iii, iv.58. Occasional.

Holotype ♀ and allotype ♂ retained in author's collection. Male and female paratypes will be deposited in the British Museum (Nat. Hist.).

Badonnel (1943) re-established the genus *Holoneura* Tetens, 1891, with the single species *Holoneura laticeps* Kolbe. The following characters of *Holoneura*, cited by Badonnel as serving to distinguish it from *Mesopsocus* Kolbe, 1880, are also found in the present species : adults of both sexes fully winged ; in the fore wing *rr* and *m* fused for a certain length, nerve *an* unpigmented ; male paraprocts with a double conical tubercle on the posterior margin ; parameres of the male without an external lobe pre-apically. An additional character given by Badonnel, namely that the dorsal valve of the female gonapophyses has a folded appearance and the apical point is in the middle of its posterior margin, is not fully exemplified in *M. hongkongensis*, although the apical point of the dorsal valve is some distance from its dorsal margin.

The marked indentation of the posterior margin of the valve immediately dorsal to the point, which is apparent in *M. hongkongensis*, is clearly shown in Badonnel's figure of *Holoneura laticeps*. It is not to be found in other species of *Mesopsocus*.

Badonnel (1945) later described a species from Morocco, *Mesopsocus maroccanus*, which exhibits a mixture of the two sets of characters. The male possesses all the characters of " Holoneura ", while the female is apterous and the point of the dorsal valve of the gonapophyses is not in the middle of its posterior margin. In discussing the affinities of this species, Badonnel pointed out that the question of the validity of the genus *Holoneura* was thus raised anew. Smithers (1957) has recently described from South Africa several *Mesopsocus* species with apterous females, in which the males showed various conditions of the parameres, examples both with and without preapical external lobes being figured. Badonnel, in a personal communication, has moreover suggested to me two reasons for abandoning the name *Holoneura*. Roesler (1944) showed that the name is preoccupied, and Tetens' type is in reality *Hemerobius unipunctatus* Mull., 1764 (Kimmins, 1941).

Nevertheless, it seems that there exist in Eurasia two groups of species, with the characteristics of *Mesopsocus* and *Holoneura* as defined by Badonnel (1943). The presence of intermediate species from Africa, however, has shown that the generic split was probably premature, despite the discovery of this second species in the " Holoneura " group.

Philotarsidae Pearman, 1936.

Haplophallus gen. n.

Venation and ciliation of fore and hind wings as in *Philotarsus*. Hypandrium of male simple, broadly based, slightly notched at apex; penial frame simple, dilated anteriorly, lacking internal or apical accessory sclerites; paraprocts of male with sensory area of normal shape, epiproct broad based, oblong. Subgenital plate of female with narrow pointed apical process, more than twice as long as wide; dorsal valve of female gonapophyses rectangular.

Type species: *Haplophallus orientalis* sp. n.

Characters serving to differentiate this genus from the other two known genera (*Philotarsus* Kolbe and *Aaroniella* Mockford) in this family are summarised in Table III. It may be noted that *Haplophallus* appears to occupy a somewhat intermediate position with respect to the other two genera.

Haplophallus orientalis sp. n.

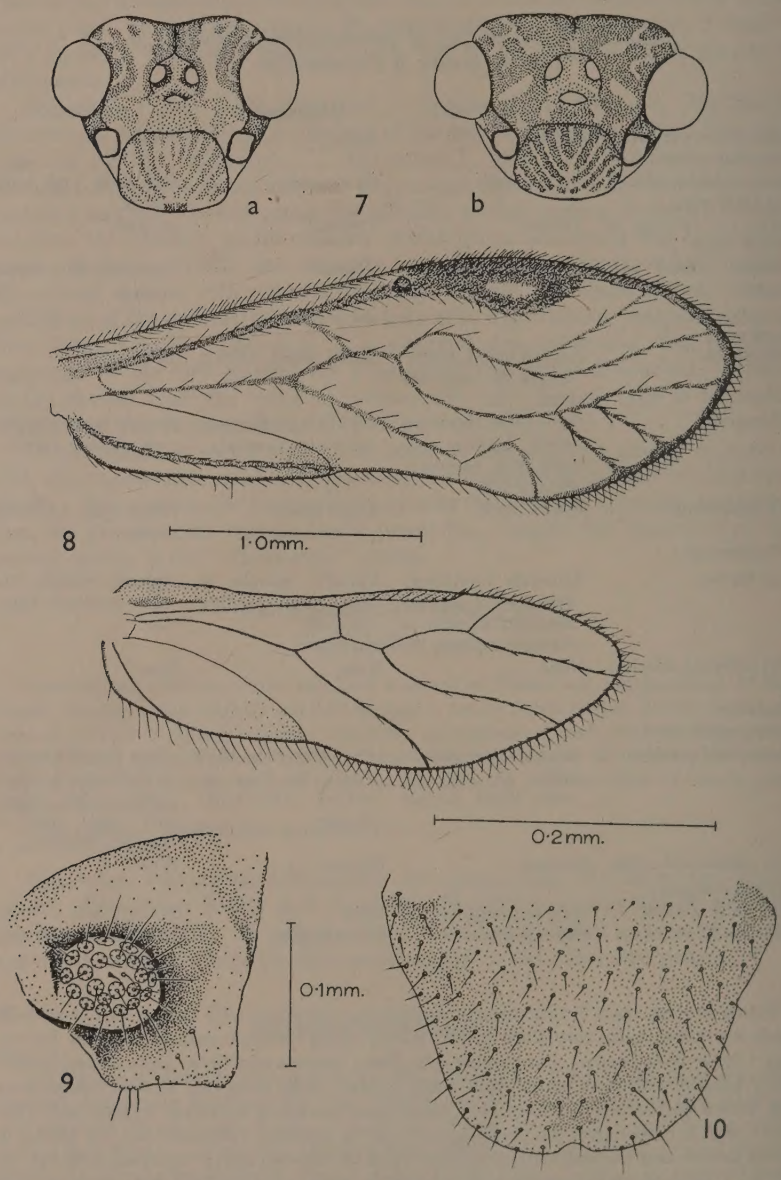
Female

Coloration (in alcohol, freshly killed).—Head generally, light cream with very pronounced dark brown markings (fig. 7*a*). Postclypeus with dark brown parallel markings, a semicircular cream or white area on each side of anterior margin; anteclypeus white; labrum dark brown. Genae pale whitish-yellow, with dark brown pigment round antennal socket and along ventral border of gena, band of light brown merging spots immediately below eye. Antennae with scape and pedicel pale brown, first flagellar segment pale brown, darker distally, all other segments brown. Eyes with facets bordered greenish-cream, whole eye darkening to black with storage. Maxillary palpi light brown, except distal segment dark brown.

TABLE III.—*Summary of distinguishing characters of three genera of Philotarsidae*

	Philotarsus	*Haplophallus*	*Aaroniella*
Hairs of fore wing sited on dark spots	None	None	Most
Hairs on sectorial fork of hind wing	On r_{4+5} only	On r_{4+5} only	On stalk and both arms.
Hairs on cubitus of hind wing	Present	Present	Absent.
Antennal colour pattern	Normal	Normal	Segments with white apices
MALE—			
Epiproct . .	Narrow based, spatuliform or long oblong	Broad based, oblong	Triangulate.
Paraproct . .	Unevenly tapering (strip bearing sensory field narrowly contracted)	Evenly tapering (sensory area normal)	Evenly tapering (sensory area normal).
Hypandrium .	Broad based	Broad based	Narrowing towards base.
Phallosome :			
(*a*) frame . .	Apically complex, basally expanded inwardly to form a cordiform plate	Apically simple, in basal half looping broadly	Apically simple, basal curvature regular.
(*b*) internal sclerites	None	None	Some.
FEMALE—			
Subgenital plate :			
(*a*) apical process	tongue-like, about twice as long as wide, blunt, simple	strip-like, more than twice as long as wide, pointed, simple	very broad basally, a little shorter than basal width, tapering apex with a median insertion.
(*b*) pigmented areas	Narrow	Narrow	Wide.
Gonapophyses :			
(*a*) Lateral valve .	Oval-rectangular	Oval	Triangular.
(*b*) Dorsal valve .	Pointed apically	Rectangular	Bluntly pointed apically.

Thoracic terga dark brown, sutures prominently bordered with cream, except scutella which are white with very dark brown border along anterior sutures; pleura brown. Legs: coxae dark brown; trochanters colourless; femora and tibiae light cream, prominently banded with dark brown, tarsi dark brown. Fore wing (fig. 8) with conspicuous dark brown pigmentation within the pterostigma bordering a central hyaline area (the extent of this border into the pterostigma varies in different specimens but the border is always present and well marked); stigmasac white by reflected light; veins brown, except cu_2 and cu_{1b}; faint brown coloration at basal end of costal cell, basal and distal ends of anal cell, and distal end of second cubital cell. (In some specimens this coloration is only present at the distal angles of the anal and second cubital cells, in some the distal angle of the first cubital cell is also very faintly pigmented, and in a few the veins forming the distal angle of the basal radial cell are bordered by a diffuse brown pigmentation.) Hind wing (fig. 8)



FIGS. 7–10.—Head pattern of (*a*) *Haplophallus orientalis* sp. n., (*b*) *Haplophallus fenestristigma* (End.) (from a drawing by Pearman). (8–10) *Haplophallus orientalis* sp. n. (8) Wings of female ; (9) paraproct of male ; (10) hypandrium of male.

with faint brown coloration throughout costal cell except at its basal end; very faint brown smokiness at distal end of second cubital cell.

Abdomen light brown, with four pale cream bands running antero-posteriorly across the terga, the two median bands sometimes ill-defined; a wider pale median longitudinal band ventrally, often ill-defined; apical structures brown, edged with white.

Morphology.—Median epicranial suture well defined.

Fore wing with stigmasac prominent, relatively large; relative lengths and parallelism of m_2 and m_3 very variable, as is position of origin of radial fork relative to origin of m_2 and m_3. Number of ctenidiobothria on first segment of hind tarsus: 10–21 (48 specimens, average 16).

Terminal lobe of subgenital plate (fig. 11) long, slender, bearing about 6 setae apically; main body of plate evenly covered with setae and with a narrow sclerotised band at each side close to its posterior margin.

A field of 19 trichobothria and 2 cilia without rosette-like sockets on each paraproct.

Gonapophyses (fig. 12): ventral valve (first valvula) styliform, bearing a number of short recurved setae distally on its ventral surface; dorsal valve (second valvula) large, apparently rectangular in side view, but dorsal margin is in fact folded at right angles to rest of the valve, a conical lobe on its posterior margin dorsally; lateral valve (third valvula) ovoid, almost as long as dorsal valve (not lying in the same plane as the latter), evenly covered with long setae.

Dimensions.—Body length (in alcohol): 2·4 mm.

Dimensions of other characters as in Table IV*a*.

TABLE IV.—*Length (in mm.) of eleven characters of* Haplophallus orientalis

	(*a*) FEMALE				(*b*) MALE			
Character	Number of specimens measured	Mean (mm.)	Standard deviation (mm.)	Range (mm.)	Number of specimens measured	Mean (mm.)	Standard deviation (mm.)	Range (mm.)
Fw	52	2·484	0·118	2·200–2·713	45	2·390	0·099	2·125–2·750
Hw	51	1·963	0·096	1·742–2·182	41	1·890	0·076	1·697–2·045
Hf	51	0·427	0·025	0·369–0·483	46	0·441	0·024	0·362–0·483
Ht	50	0·873	0·048	0·773–0·985	46	0·880	0·055	0·712–0·970
t_1	51	0·277	0·030	0·222–0·337	46	0·303	0·029	0·235–0·375
t_2	51	0·060	0·006	0·045–0·069	44	0·060	0·005	0·053–0·068
t_3	50	0·082	0·008	0·063–0·098	44	0·082	0·010	0·068–0·098
A	43	1·375	0·079	1·242–1·515	23	1·679	0·073	1·576–1·803
f_1	50	0·310	0·029	0·254–0·372	25	0·390	0·034	0·324–0·445
f_2	50	0·208	0·015	0·178–0·238	25	0·258	0·018	0·222–0·292
f_3	49	0·181	0·015	0·143–0·210	25	0·215	0·013	0·191–0·254
Ratio t_1/t_2	51	4·67	0·562	3·91–6·41	44	5·04	0·374	4·23–5·83
Ratio f_1/f_2	50	1·49	0·131	1·21–1·73	25	1·51	0·064	1·38–1·60

MALE

Coloration (in alcohol, freshly killed).—As female, but antennae wholly dark brown.

Morphology.—Flagellum thicker than that of female, setae on first segment of flagellum over three times as long as those of female. Number of ctenidiobothria on first segment of hind tarsus: 16–23 (45 specimens, average 18).

An oval field of 22 trichobothria on each paraproct (fig. 9) with additional setae (two central and one marginal) without rosette-shaped sockets.

Genitalia: hypandrium (fig. 10) simple, evenly setose, a broadly U-shaped pattern of sclerotisation, a median notch on its posterior margin. Penial frame (fig. 13) closed anteriorly forming with the aedeagus a complete sclerotised ring, looping broadly in basal half and bluntly pointed medially on basal margin; aedeagus not rounded apically and with minute chitinous spines; parameres with chitinous nodules on apices.

Dimensions.—Body length (in alcohol): 2·0 mm.

Dimensions of other characters as in Table IV*b*. Antennae longer than those of female, there being no overlap in measurements of the sexes.

NYMPH

Possessing glandular hairs. Easily identified by the 4 cream longitudinal bands on the abdomen dorsally.

HONG KONG ISLAND: On *Pinus massoniana*, ix.57; xii.57; i, ii, iii, iv, v.58. Common.

Holotype ♀ and allotype ♂ retained in author's collection. Male and female paratypes will be deposited in the British Museum (Nat. Hist.).

Enderlein (1931) described *Kolbea fenestristigma* from the Seychelles, the fore wing of which, from Enderlein's figure, shows a remarkable resemblance to that of *Haplophallus orientalis*. A close examination of the figure, which is of the complete insect, revealed the possible presence of three segments on the tarsi. Mr. D. E. Kimmins kindly examined one of the type series in the British Museum and confirmed the presence of three-segmented tarsi and a pre-apical tooth on the claw. Accordingly, at my request, Mr. J. V. Pearman made a preparation of a male of this series and sent me detailed drawings and data which have enabled a comparison to be made with the Hong Kong specimens.

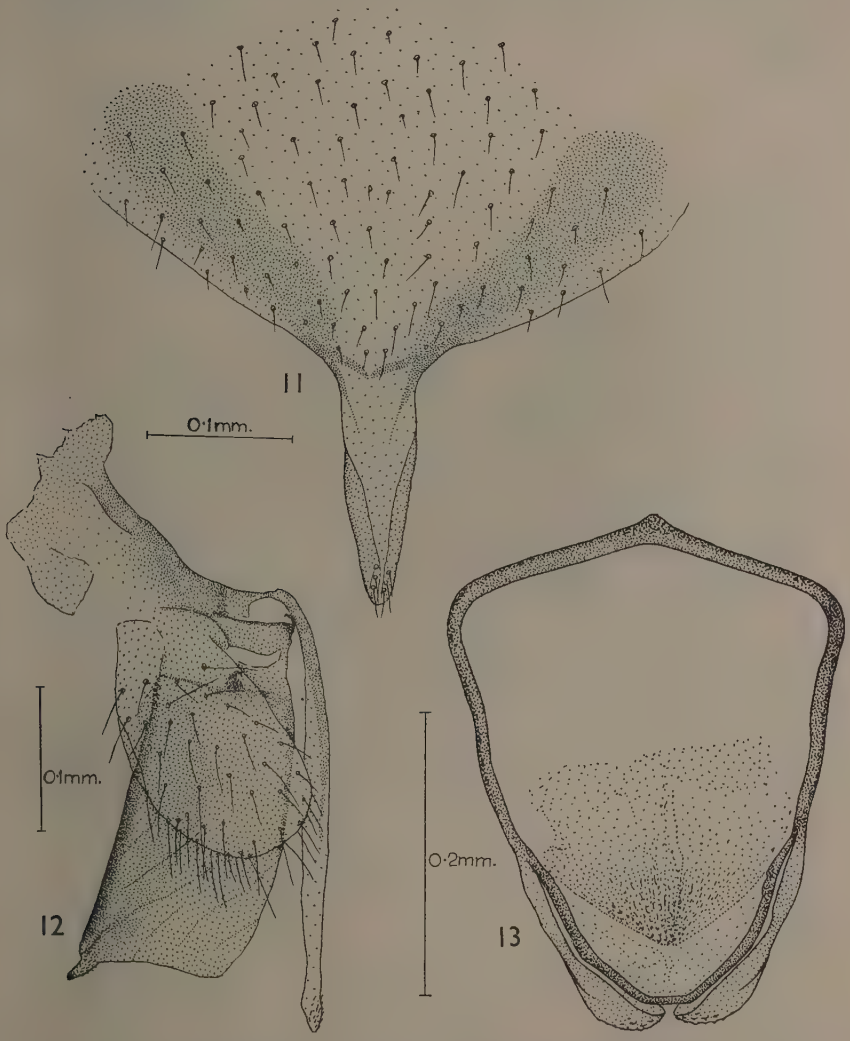
The two species are very close, and undoubtedly congeneric; Enderlein's species is thus transferred to the new genus. In *H. orientalis* the range of variation in fore wing length, venational relationships in the fore wing, and number of ctenidiobothria on the first hind tarsal joint is such as to include the Seychelles examples. Enderlein's description of the colours of the thorax and abdomen (probably made from dried specimens) differs from that for *H. orientalis* (above).

In the fore wing of *Haplophallus fenestristigma* (Enderlein) there is a pigmented margination to the root section of *rs*, to the distal arms of the sectorial fork, widening progressively going apicalwards but at the tips only scarcely wider than the veins themselves, and a very pale inconspicuous margination alongside cu_1. Wing pigmentation varies in *H. orientalis*, some specimens having a pigmented margin to the root sections of *rs* and *m*, to cu_1, and in a few cases also to the extreme tips of the radial fork. In the latter case the pigmental margin on the other veins mentioned is always the more conspicuous.

The phallosome of the male of *H. fenestristigma* is apically simple, with no internal sclerites, but differs slightly from that of *H. orientalis* in that the aedeagus is evenly rounded apically and the covering membrane is roof-like near the apex, with a median ridge. A comparison of the basal half of the phallosome has not been possible.

The most decisive and obvious difference between the two species is in head markings (fig. 7*a* and *b*). This pattern is fairly constant in *H. orientalis* and never approaches that of *H. fenestristigma*.

Edwards (1950) described *Philotarsus greyi* from Tasmania, in which features of the male genitalia approach the condition found in *Haplophallus*. The phallic frame is simple apically and broadens basally into an angular loop. The presence or absence of hairs on *cu* of the hind wing of *P. greyi* is a matter of some doubt; in Edwards's figures the male hind wing shows the presence of hairs on this vein, while in that of the female *cu* is bare. The dorsal valve of the female gonapophyses is rectangular, but lacks the terminal point of *H. orientalis*,



Figs. 11–13.—*Haplophallus orientalis* sp. n. (11) Subgenital plate of female; (12) gonapophyses of female; (13) male phallosome.

while the external valve is of a rather different shape. In the subgenital plate, the terminal lobe is shorter than that of *H. orientalis*, although pointed apically, and the pigmented areas widen anteriorly. Information regarding the male epiproct and paraproct is lacking. *P. greyi* differs from both *Haplophallus fenestristigma* and *H. orientalis* in the shape of the areola postica and in the pattern of pigmentation of the fore wing.

It is thus possible that *P. greyi* should also be included in the genus *Haplophallus*, but on the information at present available there is insufficient evidence for such a move. A re-examination of the type specimen is thus highly desirable.

Aaroniella pulchra sp. n.

FEMALE

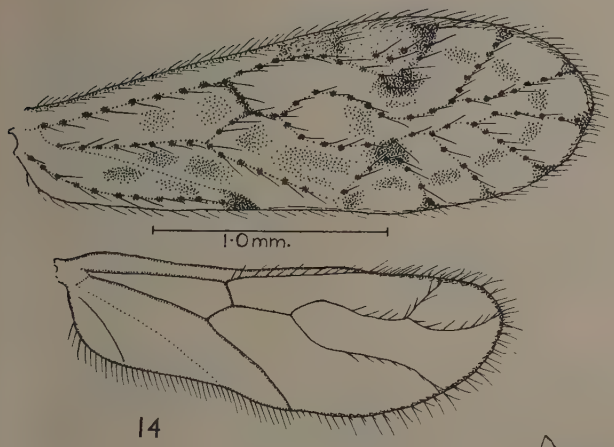
Coloration (in alcohol, freshly killed).—Head generally light buff, brown and light brown markings on frons and vertex. Ommatidia bordered with black. Post clypeus light buff with the usual brown parallel bands not extending to anterior margin, a white spoon-shaped area at each anterior corner, anterior suture dark brown; anteclypeus white with a transversely elongate central dark brown spot with a brown spot on either side, posterior margin light brown medially; labrum white with dark brown median band and wide dark brown border to anterior and lateral margins, narrower border to posterior margin. Genae white, edged with dark brown, dark brown pigment surrounding antennal socket, a broad faint brown patch below orbit; 2 brown bands across the gena, the upper narrow and sinuous, connecting 2 dark brown spots, the lower broad and faint; a dark brown spot apically. Antenna with scape pale buff, pedicel dark brown ringed with white apically, first flagellar segment light brown, rest brown, first 9 segments ringed with white apically. Eyes greenish-yellow with 2 brown stripes extending anteroposteriorly across the eye (whole eye colour changes to black on storage). Maxillary palpi with first segment white, second and third dark brown ringed with white distally, last segment black.

Mesothorax: antedorsum brown with pale cream median line; dorsa light brown bordered medially and posteriorly with pale cream; scutellum pale with dark brown anterior suture; pleura pale cream with 3 dark brown bands extending anteroposteriorly. Metathorax: antedorsum brown, pale cream posteriorly, with pale cream median band; dorsa brown, posterior margin very pale cream; scutellum pale, anterior suture dark brown; pleura with 2 dark brown bands antero-posteriorly. Legs: coxae brown, colourless distally; trochanters colourless; femora brown for proximal half, pale cream for distal half with a broad brown band subapically, white apically, a dark brown band along outer surface; tibiae pale cream, white at proximal and distal extremities, a brown line along outer edge, a broad dark brown ring subapically and a narrower ill-defined brown ring sub-basally; tarsi dark brown. Wings (fig. 14): area around stigmasac yellow, other pigmented areas brown, veins with hairs sited on dark brown spots, interval between these spots white by reflected light.

Abdomen dorsally yellowish, with anterior borders of tergites light brown, forming faint transverse bands limited laterally on each side by a thicker dark brown longitudinal band; ventral and lateral to this a yellowish longitudinal band and a further dark brown longitudinal band; sterna brown, a pale cream band along posterior margins; apical sclerites dark brown.

Morphology.—Epicranial sutures faint. Conspicuous dark brown bristles on frons, vertex and anteclypeus. Antennae moderately setose. Rest of head covered with short, moderately fine hairs.

Anterior femora with a conspicuous row of long bristles on inner edge, shorter hairs on other femora. Claws with a truncate preapical tooth. Mesothorax hairy on dorsal surface anteriorly, dorsa each with a conspicuous black bristle posteriorly, scutellum with



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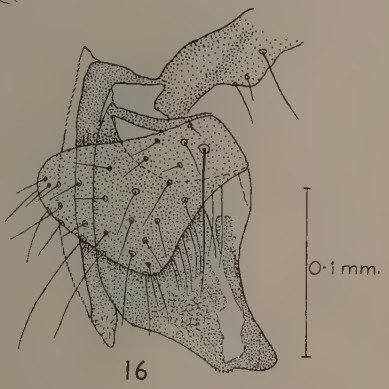

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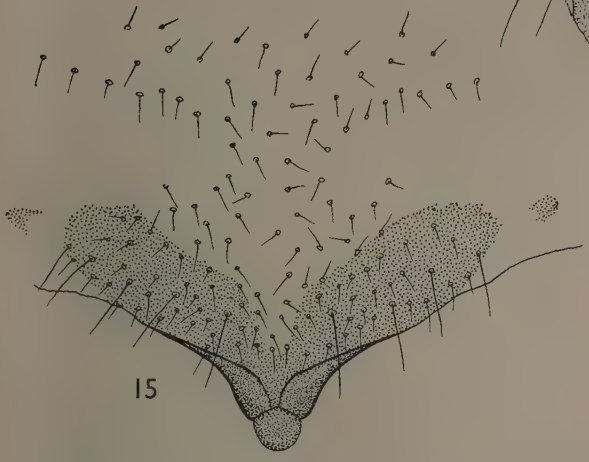

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FIGS. 14–16.—*Aaroniella pulchra* sp. n. female. (14) Wings ; (15) subgenital plate ; (16) gonapophyses.

a pair of black bristles. Metathorax bare dorsally. Number of ctenidiobothria on first segment of hind tarsus: 13, 14 (two specimens).

Abdomen glabrous dorsally, covered with very short hairs ventrally.

Subgenital plate (fig. 15): sclerotised apically, with a rounded separate sclerite at the apex; body of plate with 2 wide pigmented areas meeting in a wide V, and a smaller pigmented area on each side; main pigmented areas setose, each with a conspicuous row of 4 or 5 setae much longer than the rest, rest of plate setose medially and anteriorly.

A field of 15 trichobothria and 2 long setae not sited in pits on each paraproct.

Gonapophyses (fig. 16): ventral valve (first valvula) bearing a number of short fine setae on the tip; dorsal valve (second valvula) large, subrectangular, with a spinous area some distance ventral to apex and an unsclerotised longitudinal band ventral to dorsal margin, some sculpturing apparent posteriorly; lateral valve (third valvula) triangular, the angles rounded, bearing a number of setae of varying lengths.

Dimensions.—Body length (in alcohol): 2·5 mm.

Lengths of various other body characters as in Table V.

TABLE V.—*Length (in mm.) of eleven body characters of two females of* Aaroniella pulchra

Fw . . .	2·269	2·403
Hw . . .	1·793	1·845
Hf . . .	0·473	0·462
Ht . . .	0·838	0·881
t_1 . . .	0·241	0·256
t_2 . . .	0·046	0·041
t_3 . . .	0·056	0·056
A . . .	1·494	1·482
f_1 . . .	0·282	0·280
f_2 . . .	0·151	0·151
f_3 . . .	0·156	0·154
Ratio t_1/t_2 . .	5·24	6·24
Ratio f_1/f_2 . .	1·87	1·87

HONG KONG ISLAND: on *Sterculia lanceolata* Cav., xi, xii.58. Rare, only two females taken, male unknown.

Holotype ♀ retained in author's collection. A ♀ paratype will be deposited in the British Museum (Nat. Hist.).

The genus *Aaroniella* was created by Mockford (1951) to receive Aaron's species *maculosus* (Aaron, 1883) which was no longer referable to *Philotarsus* as restricted by Badonnel (1943). Mr. J. V. Pearman has kindly sent me drawings of the male of a species which he is shortly to describe, which is undoubtedly referable to Mockford's genus, and tracings of drawings of *Aaroniella badonelli* (Danks, 1950) which was described from a female. He pointed out that other known species suspected as assignable to this genus are mainly of Pacific distribution. Banks (1916) described *Caecilius guttulatus* from the Philippines, and, although the type specimen is not available to me, from his description and figures (although details of genitalia are not provided) it seems possible that this species is referable to *Aaroniella* Mockford, and a re-examination of the type specimen is most desirable.

Mockford lists various characters by which *Aaroniella* differs from *Philotarsus*, and *Aaroniella pulchra* agrees in the following: lateral gonapophyses

of female triangular; pigmented areas of subgenital plate wide; antennal colour pattern; hairs on veins of fore wing sited on dark spots. Mockford also states that in the hind wing *rs* is haired, though sparsely, for its entire length beyond its separation from *m*. This is not the case in *A. pulchra* (*see* fig. 14). *A. badonneli*, *A. maculosa* and *A. pulchra* also agree in that the subgenital plate is heavily sclerotised apically with a small separate sclerite at the extreme apex. *A. pulchra* can be distinguished from the other two species by the pattern of pigmentation of the fore wing, the shape of the sclerotised areas of the subgenital plate and the presence of very long setae on the lateral valve of the gonapophyses.

Elipsocidae Pearman, 1936

Elipsocus oligotrichus sp. n.

Female

Coloration (freshly killed, in alcohol).—Head generally, brown, with darker brown markings on frons and vertex. Ommatidia colourless, ommatidial protuberance black. Postclypeus brown, with dark brown bands; anteclypeus white; labrum dark brown. Genae brown, edged with very dark brown, a dark brown band along ventral margin of eye extending to antennal socket. Antennae with scape and pedicel brown, flagellar segments dark brown, all but the last tipped with very pale brown at extreme apex. Eyes dark purplish-brown. Maxillary palpi dark brown, first 3 segments ringed with white apically.

Mesothorax: antedorsum brown, marked medially and posteriorly with light brown; dorsa and scutellum brown, a light brown band along posterior margin of each dorsum. Metathorax: antedorsum light brown; dorsa and scutellum brown, sutures dark brown. Thoracic pleura brown. Legs: coxae brown; trochanters pale brown; femora pale brown with light brown spots; tibiae brown, greyish distally; tarsi brown. Wings: with faint brown pigmentation (fig. 17).

Abdomen with terga light brown, a narrow cream band bordering their posterior margins, giving abdomen a banded appearance dorsally; sterna similar, but the light brown pigment absent medially, producing a broad longitudinal band of pale cream; apical sclerites very dark brown, epiproct and paraprocts light brown.

Morphology.—Number of ctenidiobothria on first segment of hind tarsus: 15. Tibia with 4 apical spurs, first tarsal segment with 2. Fore wings with *an* hairless, veins sparsely clothed with very short hairs in basal half of wing only.

Subgenital plate (fig. 18): sclerotised portion bilobed, each lobe bearing 2 strong bristles, an unsclerotised lobe medially bearing very short fine spines; anterior margin of the heavily sclerotised area with a transverse row of 11 long stout bristles; rest of plate setose, with 1 longer bristle on each side of and anterior to this transverse row.

A circular field of 18 trichobothria on each paraproct.

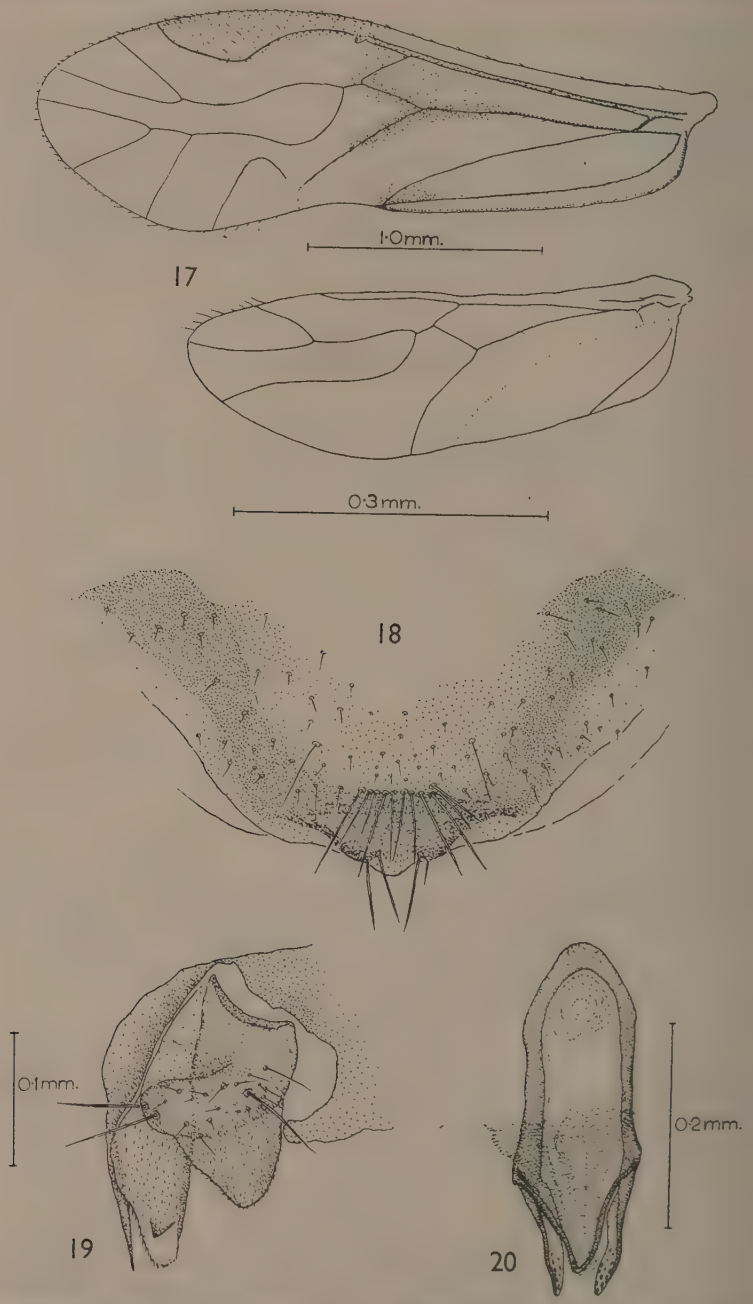
Gonapophyses (fig. 19): ventral valve (first valvula) acuminate, somewhat expanded anteriorly; dorsal valve beset with short fine spines, tapering to a rounded lightly sclerotised tip anterior to which is a prominent heavily sclerotised broad based spine; lateral valve approximately triangular, beset with short fine spines over its distal half, setose over basal half, with 3 long stout bristles.

Dimensions.—Body length (in alcohol): 2·2 mm.

Lengths of other body characters as in Table VI.

Male

Coloration (in alcohol, freshly killed).—As the female with the following differences: head darker brown; light brown markings on thoracic terga less extensive; wings without brown bands along margins of proximal cells; abdomen with narrow indistinct bands of light brown on cream background so that abdomen generally is lighter.



Figs. 17–20.—*Elipsocus oligotrichus* sp. n. (17) Wings of female ; (18) subgenital plate of female ; (19) gonapophyses of female ; (20) male phallosome.

TABLE VI.—*Length (in mm.) of eleven body characters of two specimens of* Elipsocus oligotrichus

	Male	Female
Fw . . .	2·621	2·646
Hw . . .	1·990	2·015
Hf . . .	0·483	0·462
Ht . . .	1·020	0·945
t_1 . . .	0·290	0·236
t_2 . . .	0·056	0·054
t_3 . . .	0·103	0·108
A . . .	2·427	2·009
f_1 . . .	0·457	0·387
f_2 . . .	0·346	0·280
f_3 . . .	0·281	0·244
Ratio t_1/t_2 . .	5·18	4·37
Ratio f_1/f_2 . .	1·32	1·38

Morphology.—Number of ctenidiobothria on first segment of hind tarsus: 16. Wings more bluntly rounded than in the female.

A circular field of 41 trichobothria on each paraproct.

Genitalia: hypandrium simple; penial frame (fig. 20) closed anteriorly; parameres flattened apically, with numerous rounded tubercles; "radula" triangular, fairly well sclerotised.

Dimensions.—Body length (in alcohol): 2·0 mm.

Lengths of other body characters are set out in Table VI. The flagellum is decidedly thicker and longer than that of the female.

HONG KONG ISLAND: On *Pinus massoniana* at 450 m., xii.58. Rare.

Holotype ♀ and allotype ♂ retained in author's collection.

Elipsocus oligotrichus agrees with the generic characters of *Elipsocus* given by Badonnel (1943) except that in the fore wing *an* is devoid of hairs and the veins are sparsely clothed with very short hairs in the basal half of the wing only, and the lobes of the subgenital plates each bear only two long bristles. Badonnel gives the haired or hairless condition of *an* as a character for differentiation between *Elipsocus* Hagen and *Cuneopalpus* Bad. when taken in conjunction with the shape of the last joint of the maxillary palp.

Since, in all other respects, this species agrees with the generic characters of *Elipsocus* rather than *Cuneopalpus* I have referred it to the former genus. It would appear to be a somewhat isolated species, no other species of *Elipsocus* having been reported with such a paucity of hairs in the fore wing. The nature of the subgenital plate is similar to the condition in species of *Hemineura* Tetens which, however, have apterous females and the margin of the hind wing in the males totally devoid of hairs.

Enderlein (1903) reported *Elipsocus boops* Hagen and *Elipsocus impressus* Hagen from Ceylon, and Navas (1934) described *Elipsocus rubrostigma* from India. The descriptions of all three species are insufficient, details of genitalia being lacking. Perkins (1899) described a number of species from the Hawaiian islands, without figures and without any reference to genitalia. From the information available, *E. oligotrichus* does not seem to be closely related to any of these. Species of the genera *Kilauella* End. and *Palistreptus* End.

described from the Hawaiian islands differ from species of *Elipsocus* Hagen, including *E. oligotrichus*, in the venation of the fore and hind wings.

III. Summary

Four new species of psocids are described from Hong Kong and their possible affinities discussed. One species is placed in each of the genera *Mesopsocus* Kolbe, *Aaroniella* Mockford and *Elipsocus* Hagen, and one species is placed in a newly defined genus, *Haplophallus*.

The generic characters of *Haplophallus* are compared with those of *Philotarsus* Kolbe and *Aaroniella* Mockford. *Kolbea fenestristigma* Enderlein, described from the Seychelles, is transferred to *Haplophallus*.

IV. Acknowledgments

It is a pleasure to acknowledge the assistance afforded by my colleague Mr. J. V. Pearman in allowing me access to unpublished data concerning a species of *Aaroniella* and in providing drawings and information concerning the type of *Kolbea fenestristigma*. All statements made concerning this type specimen are either based on his drawings or on information generously supplied by him. Mr. D. E. Kimmins' co-operation in confirming the three-segmented nature of the tarsus of this specimen is also gratefully acknowledged.

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